

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-35. (Canceled).

36. (New) Process for current limiting with a current limiting device which comprises stationary electrodes and at least one movable electrode, in the first operating state between the stationary electrodes an operating current being routed on a first current path through the current limiting device and the first current path being routed at least partially through the movable electrode which is in the first position, in a second operating state at least one movable electrode being moved automatically by an electromagnetic interaction with the overcurrent which is to be limited along one direction of motion into at least one second position, the movable electrode in a transition from the first position to the second position being guided along one resistance element and in at least one second position being in series with the resistance element and thus a current-limiting second current path being formed by the current limiting device which has a definable electrical resistance, characterized in that in the third operating state the movable electrode is in series with the insulator and thus an insulating clearance for circuit breaking by the device is formed.

37. (New) Process as claimed in claim 36, wherein the third operating state is triggered by an interruption command by which an external magnetic field is reversed between operation of the device as a current limiter and as a circuit breaker.

38. (New) Process as claimed in claim 36, wherein in the third operating state

- a) the movable electrode is moved along the opposite direction of motion into at least one third position and
- b) in the at least one third position the movable electrode is in series with the insulator.

39. (New) Process as claimed in claim 36, wherein

- a) the movable electrode is automatically guided along the resistance element to an extreme second position by the electromagnetic interaction with the overcurrent which is to be limited, and
- b) the extreme second position lies in the area in which the resistance element passes into an insulator so that the insulating clearance for current interruption is formed.

40. (New) Process as claimed in claim 36, wherein

- a) the resistance element for achieving a gentle interruption characteristic with an electrical resistance which rises nonlinearly along the direction of motion of the movable electrode for the second current path is chosen and/or
- b) the resistance element is ohmic and the electrical resistance increases continuously with the second position.

41. (New) Process as claimed in claim 36, wherein

- a) the second operating state is automatically activated by the overcurrent by the currently-carrying movable electrode being moved by the electromagnetic force which is perpendicular to the current through the movable electrode and perpendicular to the magnetic field and which has one force component parallel to the direction of motion,
- b) the magnetic field is chosen as an external magnetic field and/or as an internal magnetic field which is produced by a current fed to the current limiting device.

42. (New) Process as claimed in claim 36, wherein

- a) the electrical resistance as a function of the second position and a path-time characteristic of the movable electrode along the direction of motion are chosen such that
 - a) in every other position of the movable electrode the product of the electrical resistance and the current is less than the arc ignition voltage between the movable electrode and the stationary electrodes and optionally the intermediate electrodes and/or
 - b) sufficient steepness of current limitation for controlling line-induced short circuit currents is achieved.

43. (New) Process as claimed in claim 36, wherein

- a) the movable electrode comprises a liquid metal which is located in at least one channel of the current limiting device and can be moved along the vertical extension of the channel between the first current path for the operating current, the second current path for current limiting and the insulating clearance for current interruption and
- b) especially wherein several channels are separated from one another by wall-like segments which in the area of the first current path have intermediate electrodes for transmitting the operating current, in the area of the second current path have individual resistances of the resistance element and in the area of the insulating clearance pass into segments for current insulation.

44. (New) Process as claimed in claim 36, wherein

- a) the movable electrode comprises a solid-state conductor with at least one sliding contact and in the first operating state with the stationary electrodes in the second operating state is electrically connected at least on one side to the resistance element and in the third operating state at least on one side is connected to the insulator and

b) especially wherein the solid-state conductor is made essentially of lightweight metal and/or in a lightweight construction and/or the sliding contact is wetted with liquid metal for reducing friction.

45. (New) Current limiting device, especially for executing the process as claimed in claim 36, comprising stationary electrodes and at least one movable electrode, in the first operating state between the stationary electrodes there being a first current path for the operating current and the first current path is routed at least partially through the movable electrode which is in the first position, electromagnetic drive means being present for movement of the movable electrode along one direction of motion into at least one second position, which movement is automatic in an overcurrent, electrical resistance means with a definable electrical resistance being present and in the second operating state the movable electrode being at least partially in series with the resistance means and together with them forming a second current path on which the operating current can be limited to the current which is to be limited, wherein in the third operating state the movable electrode is in series with the insulator and thus an insulating clearance for power interruption by the device is present.

46. (New) Device as claimed in claim 45, wherein the electromagnetic drive means comprise magnetic field means for producing the magnetic field which exerts a Lorenz force with a force component parallel to the direction of motion on the movable electrode through which the current has flown so that the movable electrode can be moved between the first current path for the operating current, the second current path for current limitation, and the insulating clearance for current interruption.

47. (New) Device as claimed in claim 45, wherein

- a) the magnetic field means comprise the current supply to the current limiting device in order to produce an internal magnetic field which is dependent on the overcurrent which is to be limited and/or
- b) the magnetic field means comprise means for producing an external controllable magnetic field.

48. (New) Device as claimed in claim 45, wherein

- a) the magnetic field is designed according to an overcurrent which is to be limited and the path-time characteristics of the movable electrode which is necessary for this purpose in the second current path and/or
- b) the resistance means for arc-free current limitation have an electrical resistance which increases nonlinearly along the direction of motion up to an extreme second position for the second current path.

49. (New) Device as claimed in claim 45, wherein

- (a) the movable electrode comprises a liquid metal which is moved by the magnetic field means in the liquid aggregate state and/or
- (b) the movable electrode comprises a solid-state conductor with at least one sliding contact, the solid-state conductor being raised on one side or both sides by the magnetic field means against a resetting force, especially against the force of gravity.

50. (New) Device as claimed in claim 45, wherein

- a) the first current path for the operating current, the second current path for current limitation and the insulating clearance are essentially perpendicular to the direction of motion and/or essentially parallel to one another and/or
- b) at least one insulating clearance for current interruption is located above the second current path and/or underneath the first current path.

51. (New) Electrical switchgear assembly, especially high voltage or medium voltage switchgear assembly, comprising a device as claimed in claim 45.

52. (New) Process as claimed in claim 37, wherein in the third operating state

- a) the movable electrode is moved along the opposite direction of motion into at least one third position and
- b) in the at least one third position the movable electrode is in series with the insulator.

53. (New) Process as claimed in claim 39, wherein

- a) the resistance element for achieving a gentle interruption characteristic with an electrical resistance which rises nonlinearly along the direction of motion of the movable electrode for the second current path is chosen and/or
- b) the resistance element is ohmic and the electrical resistance increases continuously with the second position.

54. (New) Process as claimed in claim 39, wherein

- a) the electrical resistance as a function of the second position and a path-time characteristic of the movable electrode along the direction of motion are chosen such that
 - a) in every other position of the movable electrode the product of the electrical resistance and the current is less than the arc ignition voltage between the movable electrode and the stationary electrodes and optionally the intermediate electrodes and/or
 - b) sufficient steepness of current limitation for controlling line-induced short circuit currents is achieved.

55. (New) Process as claimed in claim 42, wherein

- a) the movable electrode comprises a liquid metal which is located in at least one channel of the current limiting device and can be moved along the vertical extension of the channel between the first current path for the operating current, the second current path for current limiting and the insulating clearance for current interruption and
- b) especially wherein several channels are separated from one another by wall-like segments which in the area of the first current path have intermediate electrodes for transmitting the operating current, in the area of the second current path have individual resistances of the resistance element and in the area of the insulating clearance pass into segments for current insulation.

56. (New) Device as claimed in claim 47, wherein

- a) the magnetic field is designed according to an overcurrent which is to be limited and the path-time characteristics of the movable electrode which is necessary for this purpose in the second current path and/or
- b) the resistance means for arc-free current limitation have an electrical resistance which increases nonlinearly along the direction of motion up to an extreme second position for the second current path.

57. (New) Device as claimed in claim 48, wherein

- (a) the movable electrode comprises a liquid metal which is moved by the magnetic field means in the liquid aggregate state and/or
- b) the movable electrode comprises a solid-state conductor with at least one sliding contact, the solid-state conductor being raised on one side or both sides by the magnetic field means against a resetting force, especially against the force of gravity.